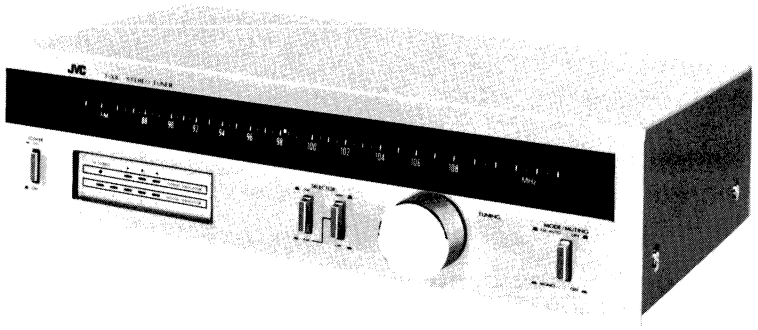
JVC

SERVICE MANUAL

MODEL T-X1L

STEREO TUNER



No. 2513
MAR. 1980

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WARNING!
When replacing the parts marked with ⚠ , be sure to use the designated parts to ensure safety.

1. Specifications

FM Tuner Section

Tuning Range	: 87.6 MHz – 108 MHz
Usable Sensitivity (IHF)	: 10.3 dBf 0.9 μV/75 Ω
46 dB Quieting Sensitivity	
Mono	: 25.2 dBf 5.0 μV/75 Ω
Stereo	: 45.2 dBf 50.0 μV/75 Ω
Distortion (DIN)	
Mono	: 0.10 % (1 kHz)
Stereo	: 0.20 % (1 kHz)
Signal to Noise Ratio	
Mono	: 74 dB DIN, (82 dB IHF)
Stereo	: 65 dB DIN, (70 dB IHF)
Selectivity	: 45 dB ±300 kHz DIN (65 dB ±400 kHz IHF)
Capture Ratio	: 1.0 dB
IF Rejection	: 90 dB at 98 MHz
Image Rejection	: 60 dB at 98 MHz
Stereo Separation	: 1 kHz – 45 dB
De-emphasis	: 50 μsec.
Output Level (400 Hz, 100 % Mod.)	: 310 mV DIN (600 mV/3.3 kΩ IHF)

MW Tuner Section

Tuning Range	: 525 kHz – 1605 kHz
Usable Sensitivity	: 300 μV/m, 50 μV (External Antenna)
Signal to Noise Ratio	: 50 dB
Distortion	: 0.5 %
Selectivity	: 40 dB, ±9 kHz (45 dB, ±10 kHz)

LW Tuner Section

Tuning Range	: 150 kHz – 350 kHz
Usable Sensitivity	: 500 μV/m, 80 μV (External Antenna)
Signal to Noise Ratio	: 50 dB
Distortion	: 0.5 %
Selectivity	: 40 dB, ±9 kHz (45 dB, ±10 kHz)
Dimensions	: 4-1/4"(H) x 16-1/2"(W) x 12-3/8"(D) (108 mm x 420 mm x 313 mm)
Weight	: 8.82 lbs. (4.0 kg)

Design and specifications subject to change without notice.

2. Removal Procedures

2-(1) Top Cover and Bottom Plate

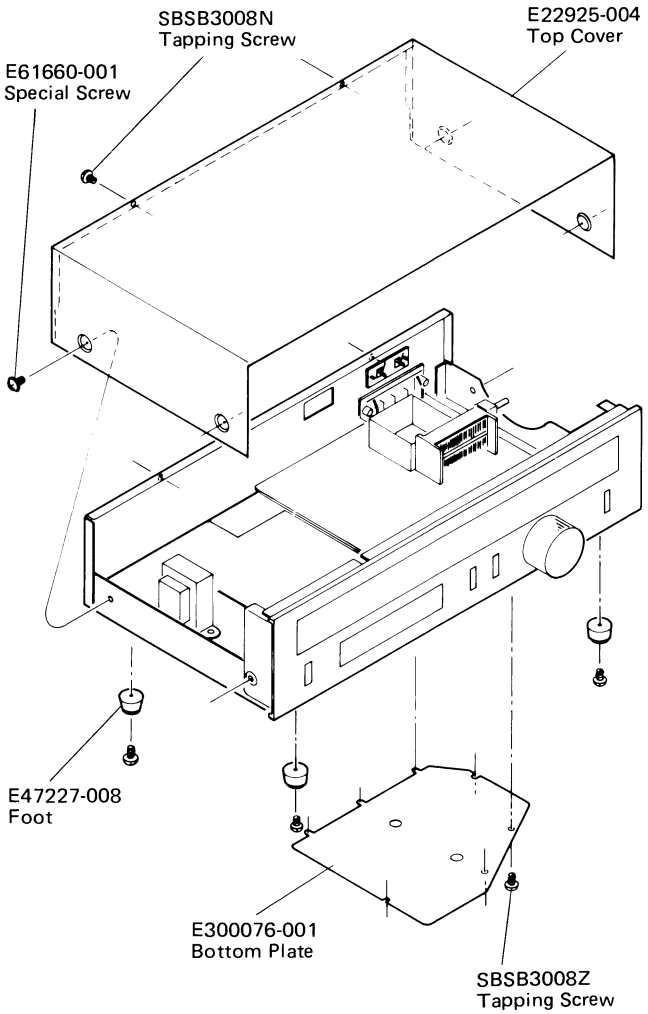


Fig. 1

2-(2) TXX-262 Power Supply P.C. Board Ass'y

Procedures:

1. Remove the earth terminal screw (item No. 1).
2. Remove the socket wire from the TXX-262 P.C. Board Ass'y (item No. 2).
3. Remove the spring needle wire (item No. 3).
4. Remove the 4 wire clamps (item No. 4) from the P.C. Board Ass'y.
5. Remove the 5 fastners (item No. 5) from the Ass'y.
6. Lift up the P.C. Board Ass'y as shown in Fig. 3 and repair it.
7. When assembling P.C. Board Ass'y, follow the reverse order of removal.

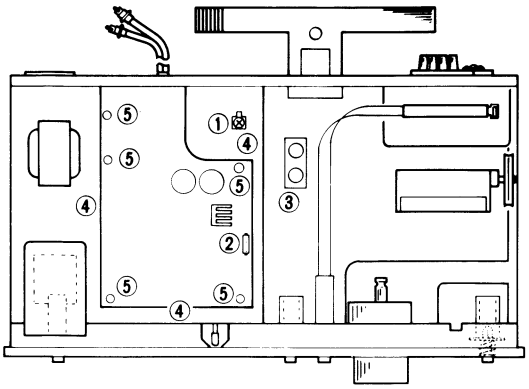


Fig. 2

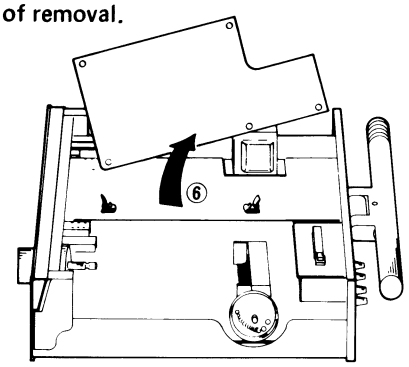


Fig. 3

3. Main Parts Location and Part Numbers

3-(1) Top View

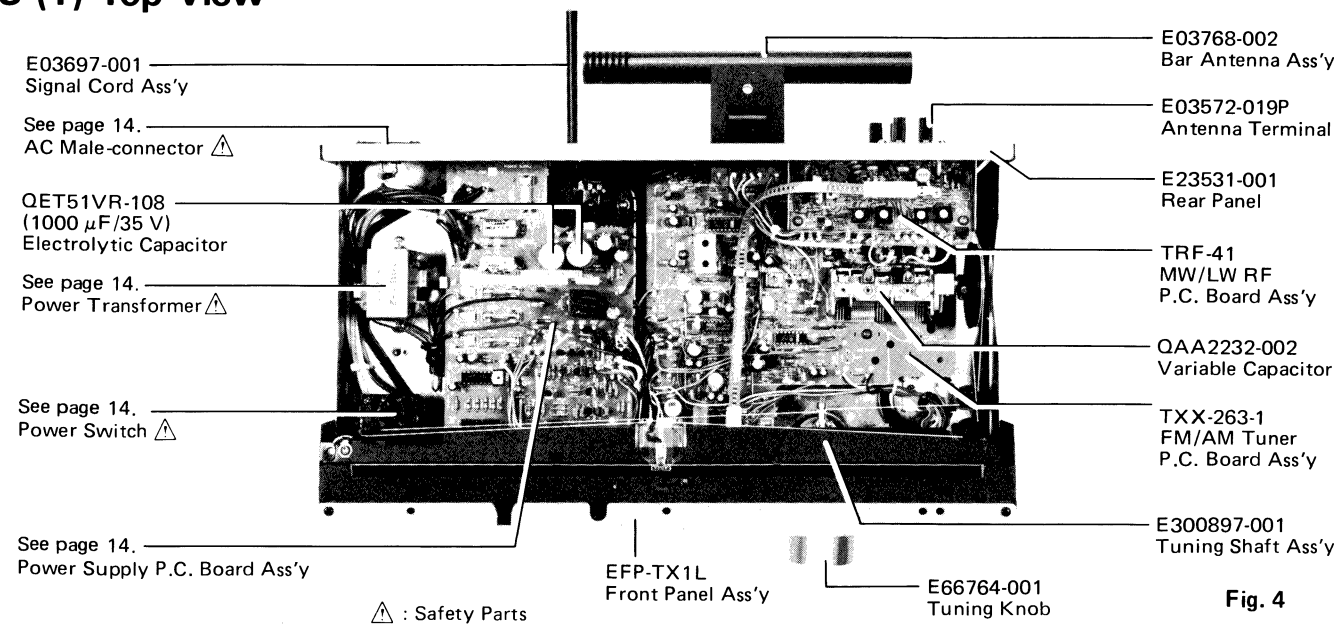


Fig. 4

3-(2) Front View

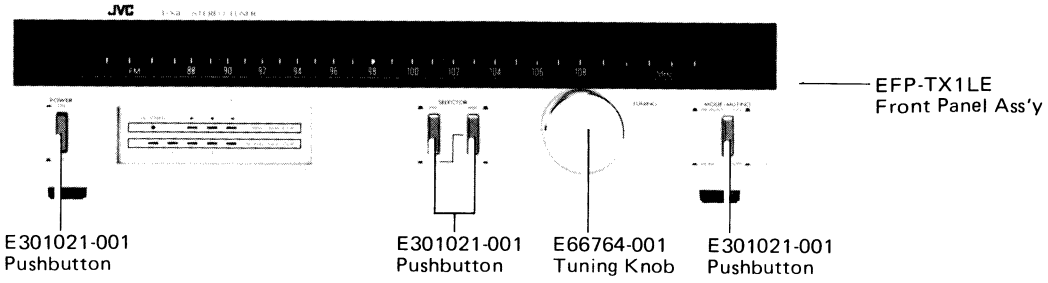
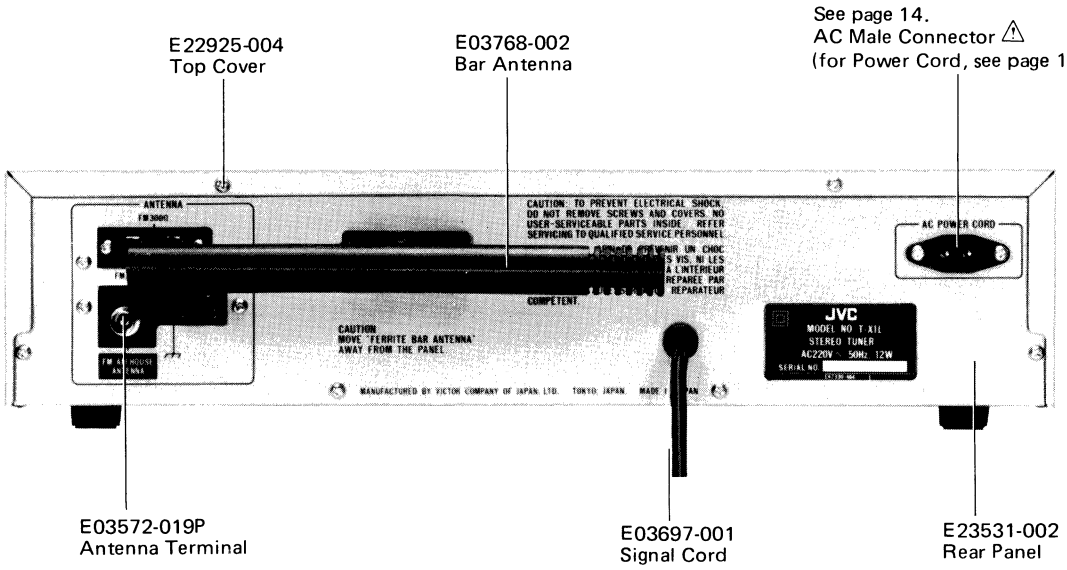


Fig. 5

3-(3) Rear View



⚠ : Safety parts

Fig. 6

4. Dial Stringing Procedure

Note: No dial stringing is necessary in normal condition. If it becomes necessary, perform it as follows.
Before removing FM/AM Tuner P.C. Board, wrap the dial drum together with dial cord by using a scotch tape and remove the dial drum carefully and then fix it on the side of chassis until replacement of this P.C. Board is completed.

Take the following 7 steps (from step ① to ⑦).

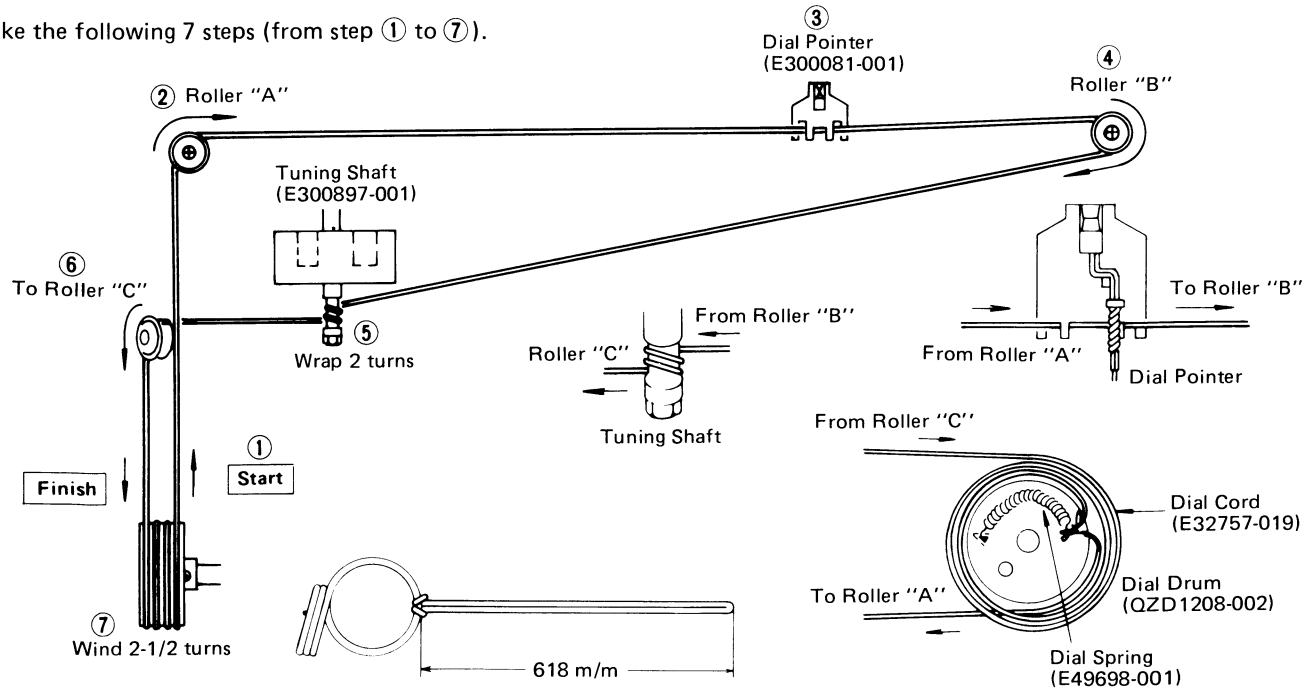


Fig. 7

5. Exploded View and Part Numbers

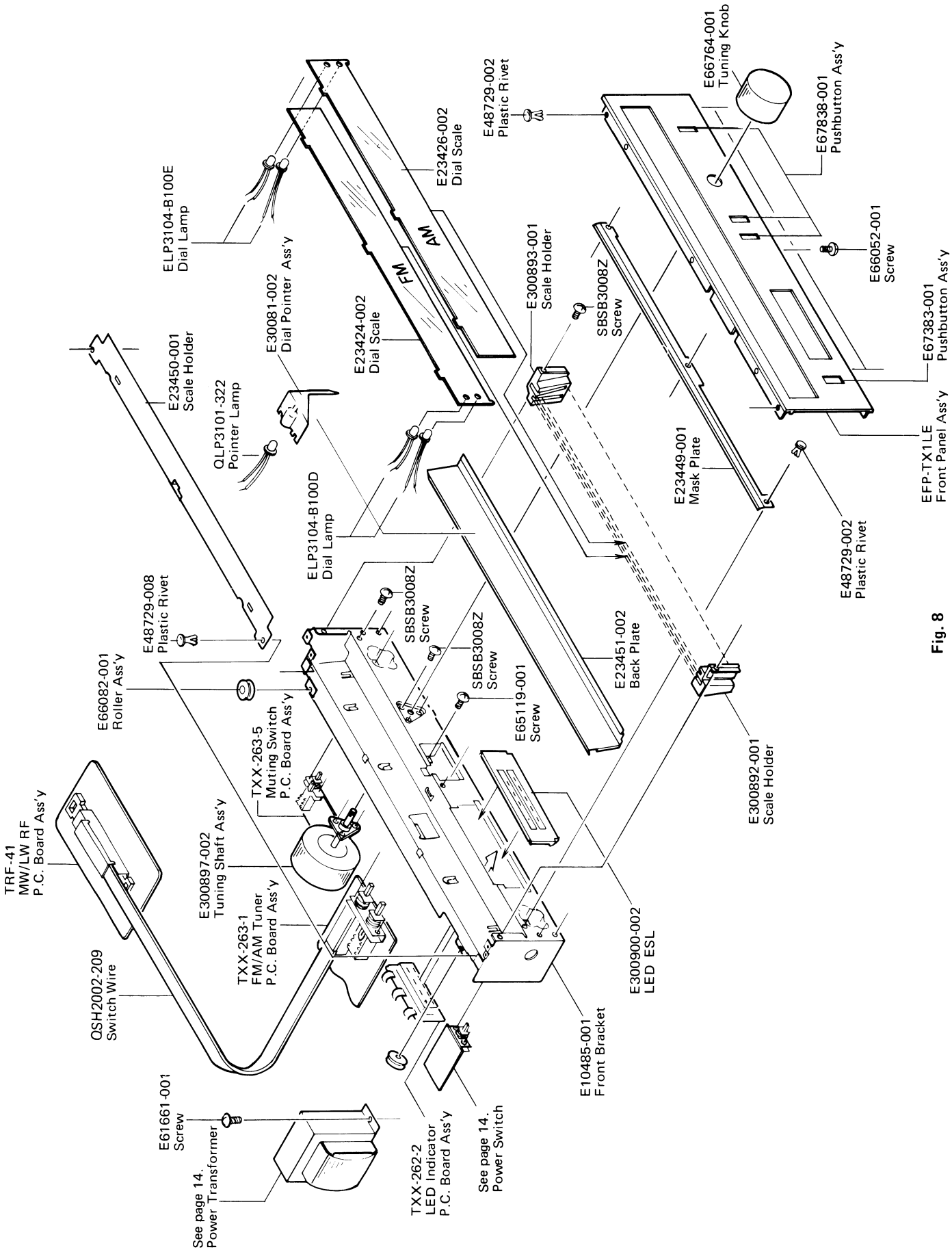
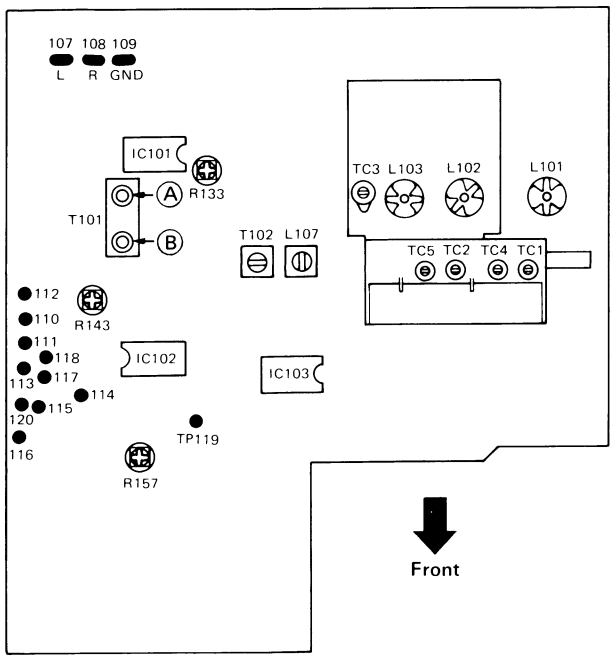


Fig. 8

6. FM/AM Tuner Alignment Procedures



Alignment Location of TXX-263 P.C. Board Ass'y **Fig. 9**

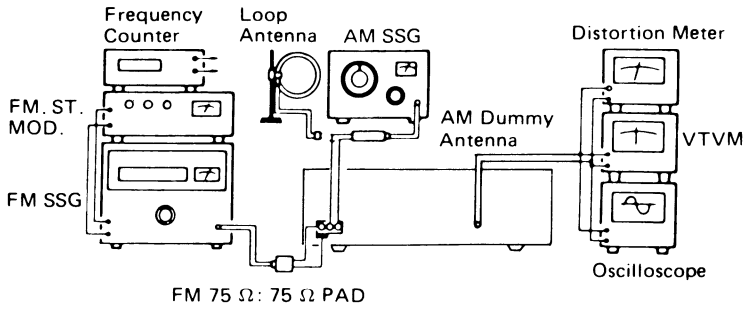


Fig. 10

6-(1) FM Section

Note: Keep in the muting pushbutton off during this procedure.

Descriminator, Center Meter, Distortion and Signal Gain

1. Connect an RF generator, 1 kHz modulation and 75 kHz deviation, to the antenna terminals on the rear panel through a dummy antenna.
2. Connect an oscilloscope, distortion meter and AC VTVM to the TAB No. 107 (Left) or 108 (Right) located on TXX-263.
3. Connect a DC VTVM to TAB No. 116 (Positive) and TAB No. 118 (Ground).
4. Tune to frequency where there is no broadcasting.
5. Adjust the core shown Arrow Ⓐ of T101 so that the DC VTVM indicates "0" (zero).
6. Set the Generator to 98 MHz.
7. Set the dial pointer to 98 MHz.
8. Adjust the core shown Arrow Ⓑ of T101 so that the distortion is minimized at a value less than 0.4 %.

Tracking and Sensitivity

Precaution: No adjustment is required. The tracking and sensitivity have been adjusted properly and completely at the factory. If any special reason occasioned, take the following procedures very carefully.

Low Frequency

1. Connect an RF Generator to the antenna terminals on the rear panel through a dummy antenna.
2. Set the RF Generator to 88 MHz, a modulation of 1 kHz and deviation of 75 kHz to provide an input of 2 μV.
3. Connect a VTVM and oscilloscope to the TAB No. 107 (Left) or 108 (Right).
4. Set the dial pointer to 88 MHz.
5. Adjust the three coils L103, L102 and L101 in the tuning gang to maximize the output.

High Frequency

6. Set the RF Generator to 108 MHz, a modulation of 1 kHz and a deviation of 75 kHz, to provide an input of 2 μV.
7. Set the dial pointer to 108 MHz.
8. Adjust the FM Trimmers TC3, TC2 and TC1 in the tuning gang to maximize the output.
9. Repeat these high and low frequencies adjustment alternately until maximum sensitivity is obtained.

Multiplex and Stereo Separation

Multiplex

1. Set the stereo signal generator as follows: 400 Hz modulation frequency, 7.5 kHz deviation pilot, 67.5 kHz main and sub carriers. Connect its output to an RF generator.
2. Connect the RF Generator to the antenna terminal through a dummy antenna.
3. Connect a VTVM, an Oscilloscope and a Distortion Meter to the TAB No. 107 (Left) or 108 (Right).
4. Set the RF Generator to the 98 MHz and an output of 1 mV.
5. Set the dial pointer to 98 MHz.
6. Connect the Frequency Counter to the TP (Test Point) 119.
7. Switch off the pilot signal of Stereo Modulator.
8. Adjust R143 so that the Frequency Counter indicates 19 kHz (0 ~ -50 Hz).

Stereo Separation

9. Switch the selector of the Stereo Modulator to Left channel modulation.
10. Adjust R157 so that the output of the Right channel is minimized.
11. Switch the selector of the modulator to Right channel modulation.
12. Adjust R157 so that the Left channel is minimized.
13. Set R157 to average, if the separation of Right and Left are different.

Muting Level

Note:
- No adjustment is necessary. However, if the checking-up is required, take the following steps.
- Keep the muting pushbutton out (ON) during this adjustment procedure.

1. Connect a VTVM and an oscilloscope to the output signal plug.
2. Set the RF generator to 108 MHz, a modulation of 1 kHz and a deviation of 75 kHz, to provide an input of 5 μV.
3. Turn R133 counterclockwise and remember the point at which the muting ceases operating.
4. Turn R133 clockwise slightly so that the output level drops by 1 dB.
5. Attenuate the output of the RF generator to 2 dB from 5 μV of step 2 and check that the muting is still operating.

6-(2) MW/LW Section

MW (LW) Tracking and Sensitivity

Low Frequency

1. Connect the RF Generator to the antenna terminal on the rear panel, set this to 600 kHz (160 kHz) with 30 % modulation at 400 Hz.
2. Connect an AC VTVM and an oscilloscope to TAB No. 107 or 108.
3. Set the dial pointer to the 600 kHz (160 kHz).
4. Adjust OSC Transformer T302 (T301) and the ferrite bar antenna adjusting the MW (LW) coil to maximize the output signal.

High Frequency

5. Set the RF Generator to 1400 kHz (350 kHz) with 30 % modulation at 400 Hz.
6. Set the dial pointer to 1400 kHz (350 kHz).
7. Adjust the trimmers TC9 (TC8) and TC7 (TC6) in the tuning gang so that the output signal is maximized.
8. Repeat these high and low frequencies adjustment procedures alternately until maximum sensitivity is obtained.

7. Printed Circuit Board Ass'y and Parts List

7-(1) TXX-262 Power Supply, Power Switch & LED Indicator P.C. Board Ass'y

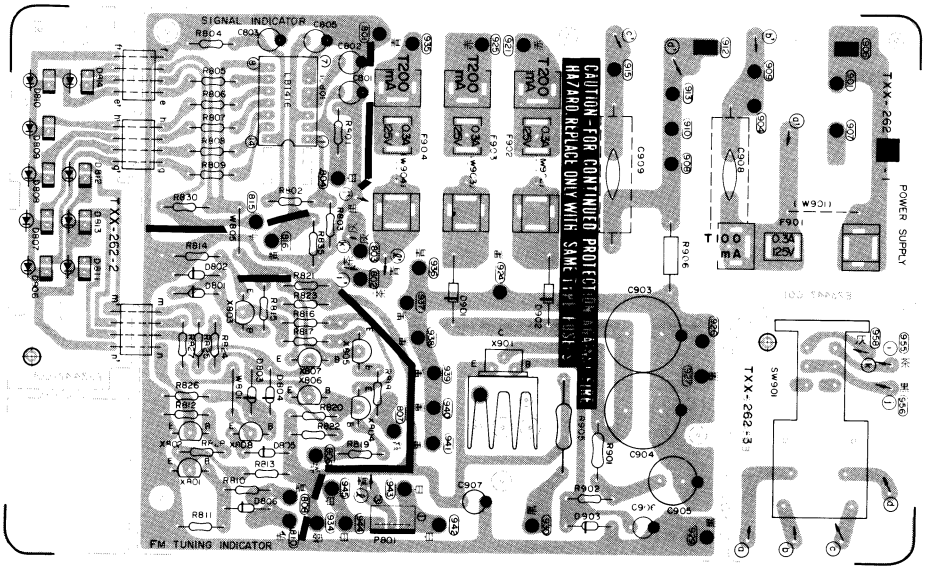


Fig. 11

Each Individual P.C. Board Location

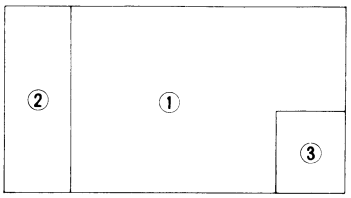


Fig. 12

① TXX-262-1: Power Supply P.C. Board Ass'y
② TXX-262-2: LED Indicator P.C. Board Ass'y
③ TXX-262-3: Power Switch P.C. Board Ass'y

Note: The specific symbols (赤,黒,白, . . . etc.) on a surface of P.C. Board are actually unrelated to the repair service and are significant denotement in order to process the proper assembly of P.C. Board at the factory.

Transistors

Item No.	Part Number	Rating		Description	
		Pc	fT		Maker
X801	2SC458(D)	0.2 W	230 MHz	Silicon	Hitachi
X802	2SC458(D)	"	"	"	"
X803	2SC458(D)	"	"	"	"
X804	2SC458(D)	"	"	"	"
X805	2SC458(D)	"	"	"	"
X806	2SA1084(D)	0.4 W	90 MHz	"	"
X807	2SA1084(D)	"	"	"	"
X808	2SA1084(D)	"	"	"	"
X901	2SD330V(E)	20 W	8 MHz	"	Sanyo ⚠

Integrated Circuits

Item No.	Part Number	Rating	Description	
		Pc		Maker
IC801	LB1416S	0.5 W	IC	Sanyo

Diodes

Item No.	Part Number	Rating	Description	
				Maker
D801	1S2076-31		Silicon	Hitachi
D802	1S2076-31		"	"
D803	1S2076-31		"	"
D804	1S2076-31		"	"
D805	1S2076-31		"	"
D806	TLG205		LED	Toshiba
D807	TLG205		"	"
D808	TLG205		"	"
D809	TLG205		"	"
D810	TLG205		"	"

Diodes

Item No.	Part Number	Rating	Description	
				Maker
D811	TLR205		LED	Toshiba
D812	TLR205		"	"
D813	TLG205		"	"
D814	TLR206		"	"
D815	1S2076-31		Silicon	Hitachi
D901	ERB12-02RKL1		" ⚠	Fuji
D902	ERB12-02RKL1		" ⚠	"
D903		Zener volt 13.2 V	Zener ⚠	NEC

Capacitors

Item No.	Part Number	Rating		Description
C801	QET51ER-106	10 μF	25 V	Electrolytic
C802	QET51CR-106	47 pF	50 V	Ceramic
C803	QET51HR-105	1 μF	"	Electrolytic
C903	QET51VR-108	1000 μF	35 V	"
C904	QET51VR-108	"	"	"
C905	QET51ER-477	470 μF	25 V	"
C906	QET51CR-107	100 μF	16 V	"
C907	QET51CR-107	"	"	"

Resistors

Item No.	Part Number	Rating		Description
R801	QRD141J-153SY	15 kΩ	1/4 W	Carbon
R802	QRD141J-104SY	10 kΩ	"	"
R804	QRD141J-153SY	15 kΩ	"	"
R805	QRD141J-470SY	47 kΩ	"	"
R806	QRD141J-470SY	"	"	"

⚠ : Safety Parts

Resistors

Item No.	Part Number	Rating		Description
R807	QRD141J-470SY	47 Ω	1/2 W	Carbon
R810	QRD141J-104S	100 kΩ	1/4 W	"
R811	QRD141J-823S	82 kΩ	"	"
R812	QRD141J-223S	22 kΩ	"	"
R813	QRD141J-103S	10 kΩ	"	"
R814	QRD126J-680S	68 Ω	1/2 W	Uninflammable ⚠
R815	QRD141J-332S	3.3 kΩ	1/4 W	Carbon
R816	QRD141J-470S	47 Ω	"	"
R817	QRD141J-470S	"	"	"
R818	QRD141J-103S	10 kΩ	"	"
R819	QRD141J-103S	"	"	"
R820	QRD149J-101S	100 Ω	"	Uninflammable ⚠
R821	QRD149J-101S	"	"	"
R822	QRD149J-100S	10 Ω	"	"
R823	QRD149J-100S	"	"	"

Resistors

Item No.	Part Number	Rating		Description
R824	QRD141J-122S	1.2 kΩ	1/4 W	Carbon
R825	QRD141J-122S	"	"	"
R826	QRD141J-104S	100 kΩ	"	"
R827	QRD141J-821S	820 Ω	"	"
R828	QRD141J-104S	100 kΩ	"	"
R901	QRD129J-102	1 kΩ	1/2 W	Uninflammable ⚠
R902	QRD141J-122S	1.2 kΩ	1/4 W	Carbon
R905	QRG027J-121	120 Ω	2 W	Oxide metal uninflammable ⚠

Others

Item No.	Part Number	Rating	Description
	EWR24J-10DC		Flat cable
	EWR26J-10DD		"
	E61537-002		Heat sink
	See page 14		Power switch ⚠
	QMV5005-003		3P. Plug ass'y

⚠ : Safety Parts

7-(2) TXX-263 FM/AM Tuner, Muting Switch & Stereo Indicator P.C. Board Ass'y

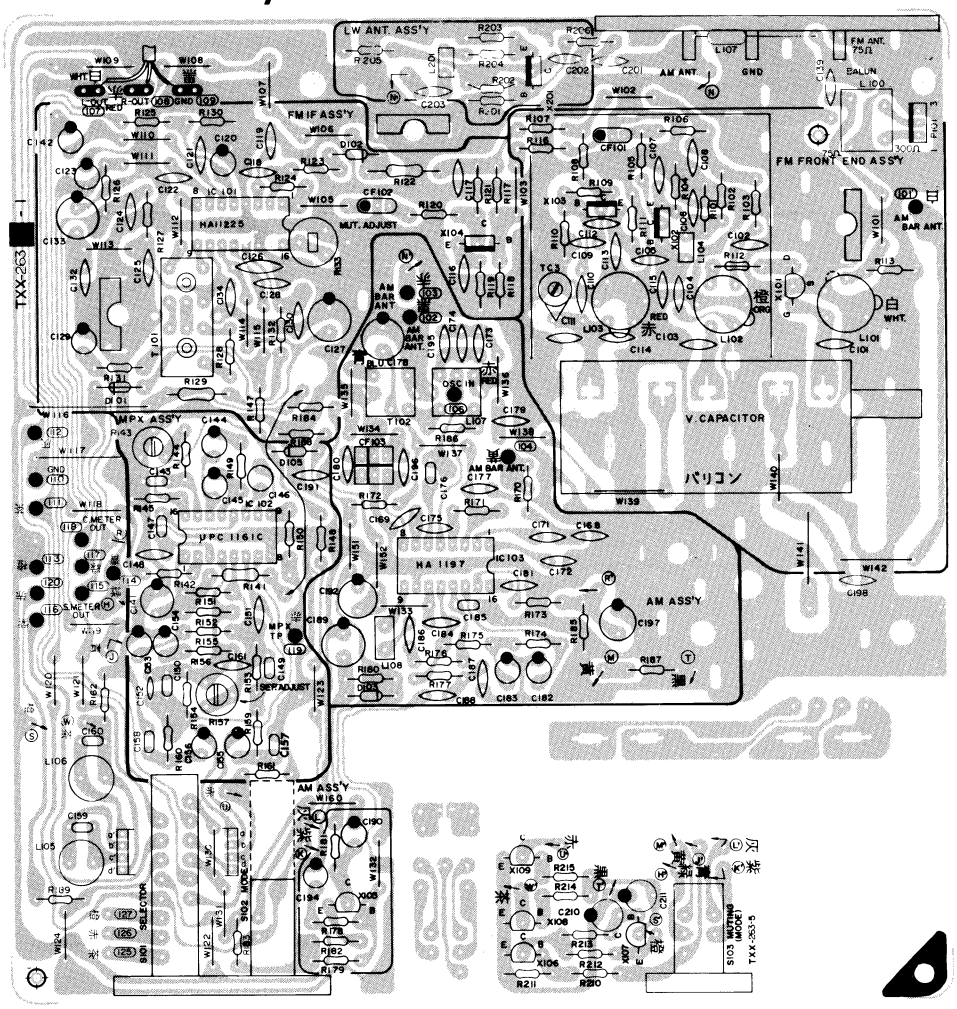


Fig. 13

Each Individual P.C. Board Ass'y Location

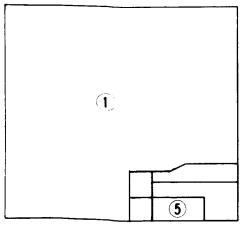


Fig. 14

① TXX-263-1 FM/AM Tuner P.C. Board Ass'y
⑤ TXX-263-5 Muting Switch P.C. Board Ass'y

Note:

(1) The specific symbols (赤, 黒, 白, . . . etc.) on a surface of above P.C. Board are actually unrelated to the repair service and are significant denotement in order to process the proper assembly of P.C. Board at the factory.

(2) No dial stringing is necessary in normal condition. If it becomes necessary, perform it as follows.
Before removing FM/AM Tuner P.C. Board, wrap the dial drum together with dial cord by using a scotch tape and remove the dial drum carefully and then fix it on the side of chassis until replacement of this P.C. Board is completed.

Transistors

Item No.	Part Number	Rating		Description	
		Pc	fT		Maker
X101	2SK61(GR)	0.2 W	(200 MHz)	FET	Toshiba
X102	2SC535(B)	0.1 W	700 MHz	Silicon	Hitachi
X103	2SC1342(C)	"	250 MHz	"	"
X104	2SC535(B,C)	"	700 MHz	"	"
X105	2SC458(C,D)	"	150 MHz	"	"
X106	2SC458(C,D)	"	"	"	"
X107	2SA872AV(E)	0.3 W	120 MHz	"	"
X108	2SD655(E,F)	0.5 W	250 MHz	"	"
X109	2SD655(E,F)	"	"	"	"
X201	2SC461(C)	0.1 W	700 MHz	"	"

Integrated Circuits

Item No.	Part Number	Rating	Description	
		Pc		Maker
IC101	HA11225	0.59 W	IC	Hitachi
IC102	μPC1161C	0.4 W	"	NEC
IC103	HA1197	0.45 W	"	Hitachi

Diodes

Item No.	Part Number	Rating	Description	
				Maker
D101	—	—	—	—
D102	1S2076-31		Silicon	Hitachi
D103	1S2076-31		"	"
D105	1S2076-31		"	"

Filters

Item No.	Part Number	Rating	Description
CF101	E03357-009		Ceramic filter
CF102	E03357-009		"
CF103	E03613-016		"

Coils & Transformers

Item No.	Part Number	Rating	Description
L101	E03477-031		RF coil
L102	E03477-035		"
L103	E03477-034		"
L104	E03522-1R5KY		"
L105	Y00118-103		Ferrite inductor
L106	Y00118-103		"
L107	E03079-36		Choke coil
L108	E03522-391KY		"
T101	E03793-001		FM Det. transformer
T102	E03613-017		AM IF transformer
L201	E03522-101KY		Choke coil

Capacitors

Item No.	Part Number	Rating		Description
CU92	QET61CR-476Z	47 μF	16 V	Electrolytic
C101	QCS31HJ-180Z	18 pF	50 V	Ceramic
C102	QCF31HP-103Z	0.01 μF	"	"
C103	QCS31HJ-180Z	18 pF	"	"
C104	QCS21HJ-3R0	3 pF	"	"
C105	QCS31HJ-2R0Z	2 pF	"	"
C106	QCS31HJ-151Z	150 pF	"	"
C107	QCF31HP-103Z	0.01 μF	"	"
C108	QCF31HP-103Z	"	"	"
C109	QCF31HP-103Z	"	"	"
C110	QCT05CH-7R0	7 pF	"	"
C111	QCT25PH-120	12 pF	"	"
C112	QCT26CH-220	22 pF	"	"
C113	QCT25CH-100Z	10 pF	"	"
C114	QCT25PH-120Z	12 pF	"	"

Capacitors

Item No.	Part Number	Rating		Description
C116	QCF31HP-223Z	0.022 μF	50 V	Ceramic
C117	QCF31HP-223Z	"	"	"
C118	QCF31HP-223Z	"	"	"
C119	QCF31HP-223Z	"	"	"
C120	QET61ER-106	10 μF	"	Electrolytic
C121	QCS21HJ-330	33 pF	"	Ceramic
C122	QCF31HP-223Z	0.022 μF	"	"
C123	QET51HR-474	0.47 μF	25 V	Electrolytic
C124	QCF31HP-223Z	0.022 μF	50 V	Ceramic
C126	QCF11HP-223	"	"	"
C127	QET51CR-476	47 μF	16 V	Electrolytic
C128	QCF21HP-223	0.022 μF	50 V	Ceramic
C129	QET61HR-474Z	0.47 μF	"	Electrolytic
C130	QCF31HP-223Z	0.022 μF	"	Ceramic
C133	QET51CR-476	47 μF	16 V	Electrolytic
C141	QET51CR-227	220 μF	50 V	Ceramic
C142	QET61HR-475Z	4.7 μF	"	"
C143	QFP31HJ-471	470 pF	"	Polystyrol
C144	QEB51EM-335	3.3 μF	25 V	Electrolytic
C145	QEB51HM-105	1 μF	50 V	"
C146	QEZ0046-224	0.22 μF	"	Electrolytic (nonpolar)
C147	QFM31HK-473Z	0.047 μF	"	Mylar
C148	QCS31HJ-471	470 pF	"	Ceramic
C149	QFM31HK-102Z	1000 pF	"	Mylar
C150	QFM31HK-102	"	"	"
C153	QET51ER-106	10 μF	25 V	Electrolytic
C154	QET61ER-106Z	"	"	"
C155	QET51HR-105	1 μF	50 V	"
C156	QET61HR-105	"	"	"
C157	QFM31HK-682Z	6800 pF	"	Mylar
C158	QFM31HK-682Z	"	"	"
C159	QFM31HK-182Z	1800 pF	"	"
C160	QFM31HK-182	"	"	"
C161	QCS31HJ-101Z	100 pF	"	Ceramic
C168	QCS31HJ-330	33 pF	"	"
C169	QCS11HJ-470	47 pF	"	"
C171	QCF31HP-223Z	0.022 μF	"	"
C172	QCF31HP-223Z	"	"	"
C175	QCF11HP-223	"	"	"
C177	QCF31HP-223Z	"	"	"
C178	QET61CR-476Z	47 μF	16 V	Electrolytic
C180	QCS21HJ-470Z	47 pF	"	"
C181	QCF31HP-223Z	0.022 μF	"	"
C182	QET61HR-105Z	1 μF	"	"
C183	QET51ER-106	10 μF	25 V	"
C184	QCF21HP-223	0.022 μF	50 V	Ceramic
C185	QFM31HK-102Z	1000 pF	"	Mylar
C186	QCS31HJ-331Z	330 pF	"	Ceramic
C187	QFM31HK-682Z	6800 pF	"	Mylar
C188	QCF31HK-223Z	0.022 μF	"	Ceramic
C189	QET51CR-227	220 μF	16 V	Electrolytic
C190	QET61HR-474Z	0.47 μF	50 V	"
C191	QCF31HP-223Z	0.022 μF	"	Ceramic
C192	QET61CR-476Z	47 μF	16 V	Electrolytic
C194	QET61ER-106Z	10 μF	25 V	"
C195	QCS31HJ-330Z	33 pF	50 V	Ceramic
C201	QCF21HP-223	0.022 μF	"	"
C202	QCF21HP-473	0.047 μF	"	"
C203	QFM31HK-473	"	"	Mylar
TC3	QAT3001-014			Trimmer
	QAA2232-002			Tuning

Resistors

Item No.	Part Number	Rating		Description
R101	QRD141J-472SY	4.7 kΩ	1/4 W	Carbon
R102	QRD141J-223SY	22 kΩ	"	"
R103	QRD141J-391SY	390 Ω	"	"
R104	QRD141J-102SY	1 kΩ	"	"
R105	QRD141J-221SY	220 Ω	"	"
R106	QRD141J-561SY	560 Ω	"	"
R107	QRD141J-220SY	22 Ω	"	"
R108	QRD141J-561SY	2.2 kΩ	"	"
R109	QRD141J-103SY	10 kΩ	"	"
R110	QRD141J-682SY	6.8 kΩ	"	"
R111	QRD141J-272SY	2.7 kΩ	"	"
R116	QRD141J-221SY	220 Ω	"	"
R117	QRD141J-273SY	27 kΩ	"	"
R118	QRD141J-103SY	10 kΩ	"	"
R119	QRD141J-471SY	470 Ω	"	"
R120	QRD141J-101SY	100 Ω	"	"
R121	QRD141J-331SY	330 Ω	"	"
R122	QRD129J-470	47 Ω	1/2 W	Uninflammable ⚠
R123	QRD141J-103SY	10 kΩ	1/4 W	Carbon
R124	QRD141J-391SY	390 Ω	"	"
R125	QRD141J-123SY	12 kΩ	"	"
R126	QRD141J-271SY	270 Ω	"	"
R127	QRD141J-123SY	12 kΩ	"	"
R128	QRD141J-332SY	3.3 kΩ	"	"
R129	QRD126J-470	47 Ω	1/2 W	Uninflammable ⚠
R130	QRD141J-473SY	47 kΩ	1/4 W	Carbon
R131	QRD141J-472SY	4.7 kΩ	"	"
R132	QRD141J-912SY	9.1 kΩ	"	"
R133	QRD141J-223	22 kΩ		Variable
R136	QRD141J-124SY	120 kΩ	1/4 W	Carbon
R141	QRZ0052-330	33 Ω	1/2 W	Uninflammable ⚠
R142	QRD141J-473SY	47 kΩ	1/4 W	Carbon
R143	QVP4A0B-472	4.7 kΩ		Variable
R144	QRD141J-163SY	16 kΩ	1/4 W	Carbon
R145	QRD141J-683SY	68 kΩ	"	"
R147	QRD141J-363SY	36 kΩ	"	"
R148	QRD141J-104SY	100 kΩ	"	"
R149	QRD141J-102SY	1 kΩ	"	"
R150	QRD141J-102SY	"	"	"
R151	QRD141J-223SY	22 kΩ	"	"
R152	QRD141J-223SY	"	"	"
R153	QRD141J-513SY	51 kΩ	"	"
R154	QRD141J-513SY	"	"	"
R155	QRD141J-103SY	10 kΩ	"	"
R156	QRD141J-103SY	"	"	"
R157	QVP4A0B-474	470 kΩ		Variable
R159	QRD141J-332SY	3.3 kΩ	1/4 W	Carbon
R160	QRD141J-332SY	"	"	"
R161	QRD141J-332SY	"	"	"
R162	QRD141J-332SY	"	"	"
R170	QRD141J-151SY	150 Ω	"	"
R171	QRD141J-152SY	1.5 kΩ	"	"
R172	QRD146J-101S	100 Ω	"	Uninflammable ⚠
R174	QRD141J-103SY	10 kΩ	"	Carbon
R175	QRD141J-103SY	"	"	"
R176	QRD141J-331SY	330 Ω	"	"
R177	QRD141J-103SY	10 kΩ	"	"
R178	QRD141J-224SY	220 kΩ	"	"
R179	QRD141J-683SY	68 kΩ	"	"
R180	QRD141J-222SY	2.2 kΩ	"	"
R181	QRD141J-332SY	3.3 kΩ	"	"
R182	QRD141J-182SY	1.8 kΩ	"	"
R183	QRD141J-473SY	47 kΩ	"	"

⚠ : Safety Parts

Resistors

Item No.	Part Number	Rating		Description
R184	QRD149J-101S	100 Ω	1/4 W	Uninflammable ⚠
R187	QRD141J-223S	22 kΩ	"	Carbon
R188	QRD141J-182S	1.8 kΩ	"	"
R201	QRD141J-153SY	15 kΩ	"	"
R202	QRD141J-104SY	100 kΩ	"	"
R203	QRD141J-222SY	2.2 kΩ	"	"
R204	QRD141J-182SY	1.8 kΩ	"	"
R205	QRD129J-101	100 Ω	1/2 W	Uninflammable ⚠
R210	QRD141J-104S	"	1/4 W	"
R211	QRD141J-393S	39 kΩ	"	Carbon
R212	QRD141J-223S	22 kΩ	"	"
R213	QRD141J-103S	10 kΩ	"	"
R214	QRD141J-223S	22 kΩ	"	"
R215	QRD141J-223S	"	"	"

Others

Item No.	Part Number	Rating	Description
	E03572-019P		Antenna terminal
	E300098-001		Shield cover
	E65396-001		Ground plate
S101	QSH1P02-001		Source selector Mode switch
S103	QSP0210-018		Muting switch

7-(3) TRF-41 MW/LW RF P.C. Board Ass'y

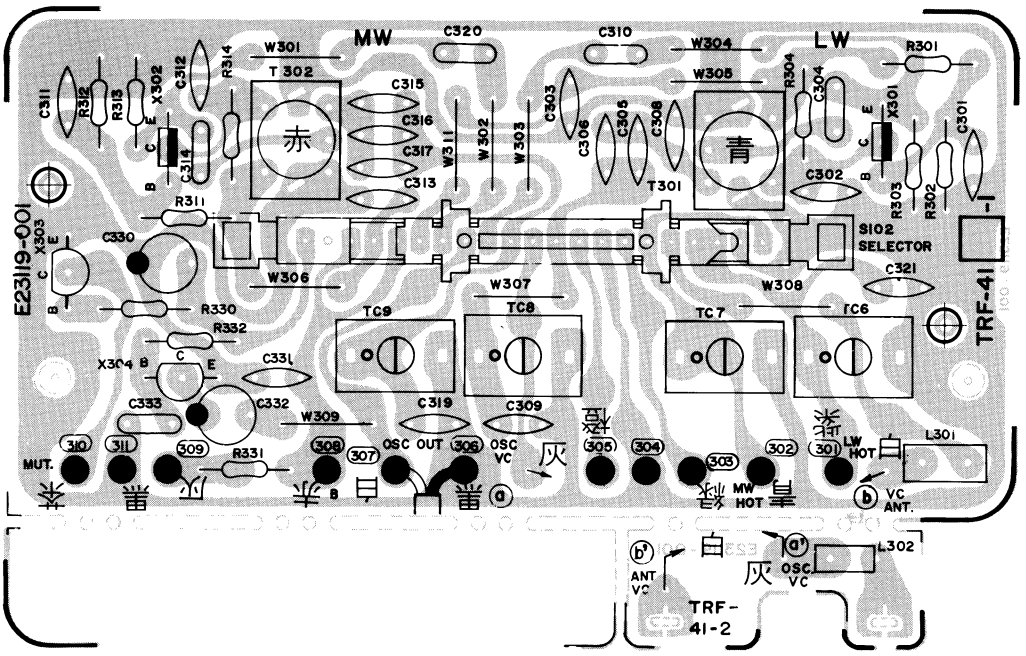


Fig. 15

Note: The specific symbols (赤, 黒, 白, . . . etc.) on a surface of P.C. Board are actually unrelated to the repair service and are significant denotement in order to process the proper assembly of P.C. Board at the factory.

Transistors

Item No.	Part Number	Rating		Description	
		Pc	fT		Maker
X301	2SC461(B)	200 mW	230 MHz	Silicon	Hitachi
X302	2SC461(B)	"	"	"	"
X303	2SC458(C)	"	"	"	"
X304	2SC458(C,D)	"	"	"	"

Coils

Item No.	Part Number	Rating	Description
T301	E03079-38		LW OSC Coil
T302	E03079-39		MW OSC Coil
L301	E03522-2R2KY		Choke Coil
L302	E03522-2R2KY		"

Capacitors

Item No.	Part Number	Rating		Description
C301	QCF21HP-473	0.047 μF	50 V	Ceramic
C302	QCS21HJ-560	56 pF	"	"
C303	QCF21HP-473	0.047 μF	"	"
C304	QFM31HK-223	0.022 μF	"	Mylar
C305	QCT26CH-680	68 pF	16 V	Ceramic
C306	QCT26CH-680	68 pF	"	"
C308	QCT26UJ-270	27 pF	"	"
C309	QCT26CH-220	22 pF	"	"
C310	QFM31HK-333	0.033 μF	50 V	Mylar
C311	QCF21HP-473	0.047 μF	"	Ceramic
C312	QCS21HJ-100	10 pF	"	"
C313	QCF21HP-473	0.047 μF	"	"
C314	QFM31HK-103	0.01 μF	"	Mylar
C315	QCT26PH-151	150 pF	16 V	Ceramic
C316	QCT26PH-151	150 pF	"	"
C317	QCS21HJ-330	33 pF	50 V	"
C319	QCT26UJ-100	10 pF	16 V	"
C320	QFM31HK-153	0.015 μF	50 V	Mylar
C321	QCS21HJ-220	22 pF	"	Ceramic
C330	QET51HR-474	0.47 μF	"	Electrolytic
C331	QCF21HP-473	0.047 μF	"	Ceramic
C332	QET51HR-105	1 μF	"	Electrolytic

Resistors

Item No.	Part Number	Rating		Description
R301	QRD148J-393S	39 kΩ	1/4 W	Carbon
R302	QRD148J-682S	6.8 kΩ	"	"
R303	QRD148J-182S	1.8 kΩ	"	"
R304	QRD148J-821S	820 Ω	"	"
R311	QRD148J-393S	39 kΩ	"	"
R312	QRD148J-822S	8.2 kΩ	"	"
R313	QRD148J-152S	1.5 kΩ	"	"
R314	QRD148J-821S	820 Ω	"	"
R321	QRD148J-103S	10 kΩ	"	"
R330	QRD148J-223S	22 kΩ	"	"
R331	QRD148J-103S	10 kΩ	"	"

Others

Item No.	Part Number	Rating	Description
TC6	QAT2001-005		Trimmer for LW
TC7	QAT2001-001		Trimmer for MW
TC8	QAT2001-005		Trimmer for LW
TC9	QAT2001-001		Trimmer for MW
S102	QSS7201-501		Band Selector

MEMO

8. T-X1L Schematic Diagram

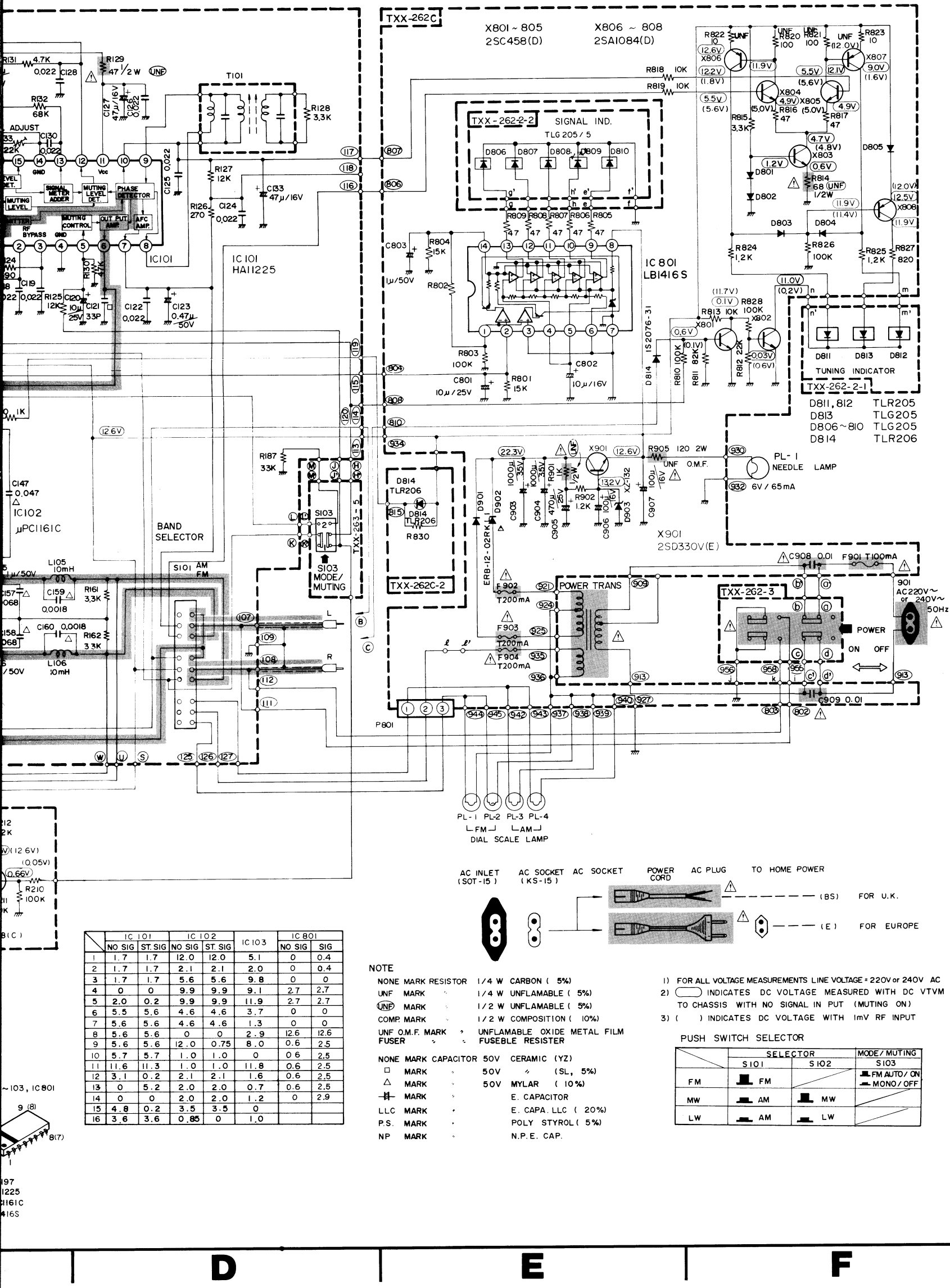
	IC 101		IC 102		IC 103	IC 801	
	NO SIG	ST. SIG	NO SIG	ST. SIG		NO SIG	SI
1	1.7	1.7	12.0	12.0	5.1	0	0.4
2	1.7	1.7	2.1	2.1	2.0	0	0.4
3	1.7	1.7	5.6	5.6	9.8	0	0
4	0	0	9.9	9.9	9.1	2.7	2.7
5	2.0	0.2	9.9	9.9	11.9	2.7	2.7
6	5.5	5.6	4.6	4.6	3.7	0	0
7	5.6	5.6	4.6	4.6	1.3	0	0
8	5.6	5.6	0	0	2.9	12.6	12.
9	5.6	5.6	12.0	0.75	8.0	0.6	2.5
10	5.7	5.7	1.0	1.0	0	0.6	2.5
11	11.6	11.3	1.0	1.0	11.8	0.6	2.5
12	3.1	0.2	2.1	2.1	1.6	0.6	2.5
13	0	5.2	2.0	2.0	0.7	0.6	2.5
14	0	0	2.0	2.0	1.2	0	2.9
15	4.8	0.2	3.5	3.5	0		
16	3.6	3.6	0.85	0	1.0		

Printed Circuit Board Ass'y Locations

P.C. Board Ass'y	Description	Page
TXX-262	Power Supply, Power Switch & LED Indicator P.C. Board Ass'y	6
TXX-263	FM/AM Tuner, Muting Switch & Stereo Indicator P.C. Board Ass'y	7
TRF-41	MW/LW RF P.C. Board Ass'y	10

Notes:

1. ▒▒ indicates FM/AM signal path.
2. —— indicates positive B power supply.
3. Parts in red indicate transistors or ICs.
4. When replacing the parts in the darkened area (▒▒) and those marked with ⚠ , be sure to use the designated parts to ensure safety.
5. This is the standard circuit diagram.
   The design and contents are subject to change without notice.



	IC 101		IC 102		IC 103	IC 801	
	NO SIG	ST. SIG	NO SIG	ST. SIG		NO SIG	SIG
1	1.7	1.7	12.0	12.0	5.1	0	0.4
2	1.7	1.7	2.1	2.1	2.0	0	0.4
3	1.7	1.7	5.6	5.6	9.8	0	0
4	0	0	9.9	9.9	9.1	2.7	2.7
5	2.0	0.2	9.9	9.9	11.9	2.7	2.7
6	5.5	5.6	4.6	4.6	3.7	0	0
7	5.6	5.6	4.6	4.6	1.3	0	0
8	5.6	5.6	0	0	2.9	12.6	12.6
9	5.6	5.6	12.0	0.75	8.0	0.6	2.5
10	5.7	5.7	1.0	1.0	0	0.6	2.5
11	11.6	11.3	1.0	1.0	11.8	0.6	2.5
12	3.1	0.2	2.1	2.1	1.6	0.6	2.5
13	0	5.2	2.0	2.0	0.7	0.6	2.5
14	0	0	2.0	2.0	1.2	0	2.9
15	4.8	0.2	3.5	3.5	0		
16	3.6	3.6	0.85	0	1.0		

~103, IC801

197
1225
1161C
416S

NOTE

NONE MARK RESISTOR	1/4 W	CARBON (5%)
UNF MARK	1/4 W	UNFLAMABLE (5%)
(UNF) MARK	1/2 W	UNFLAMABLE (5%)
COMP. MARK	1/2 W	COMPOSITION (10%)
UNF O.M.F. MARK		UNFLAMABLE OXIDE METAL FILM
FUSER		FUSEBLE RESISTER

NONE MARK CAPACITOR	50V	CERAMIC	(YZ)
□ MARK	50V		(SL, 5%)
△ MARK	50V	MYLAR	(10%)
⊣⊢ MARK		E. CAPACITOR	
LLC MARK		E. CAPA. LLC	(20%)
P.S. MARK		POLY STYROL	(5%)
NP MARK		N.P.E. CAP.	

1) FOR ALL VOLTAGE MEASUREMENTS LINE VOLTAGE = 220V or 240V AC
2) ( ) INDICATES DC VOLTAGE MEASURED WITH DC VTVM TO CHASSIS WITH NO SIGNAL IN PUT (MUTING ON)
3) ( ) INDICATES DC VOLTAGE WITH 1mV RF INPUT

PUSH SWITCH SELECTOR

	SELECTOR		MODE / MUTING
	S101	S102	S103
FM	FM		FM AUTO / ON MONO / OFF
MW	AM	MW	
LW	AM	LW	

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T-X1L
No. 2513

9. Packing Materials and Part Numbers

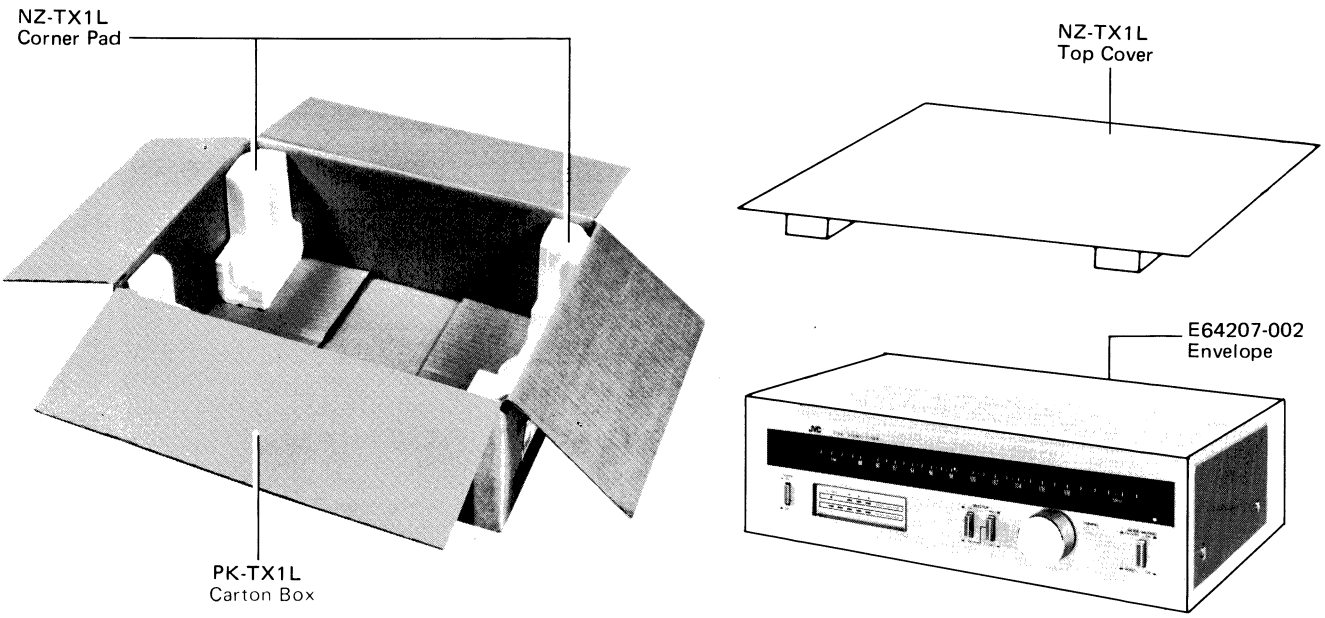

Fig. 16

10. Accessories List

Part Number	Description	Q'ty
E30580-842A	Instruction Book	1
See below	Warranty Card	1
E41202-2	Envelope for Instruction Book and Warranty Card	1
See below	Power Cord	1

11. Parts List with Specified Numbers for Designated Areas

Page	Description	For U.K.	For European Countries
2, 4	Power Transformer ⚠	E03042-30EBS	E03042-30E
2	Power Supply P.C. Board Ass'y ⚠	TXX-262EBS-1	TXX-262F-1
2, 4, 7	Power Switch ⚠	QSP0020-002BS	QSP0020-002
14	Power Cord ⚠	QMP9017-009BS	QMP3950-183
3	Fuse (Primary) ⚠ Fuse (Secondary) ⚠ Power Switch P.C. Board Ass'y ⚠	QFM51A2-R10LBS (T0.1 A) QMF51A2-R20LBS (T0.2 A) TXX-262EBS-3	QMF51A2-R10L (T0.1 A) QMF51A2-R20L (T0.2 A) TXX-262F-3
2, 3	AC Male Connector ⚠	QMC0239-002BS	QMC0239-002
14	Warranty Card	BS20013B	–

⚠ : Safety parts